

March 2, 2017, 11:30-13:00

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SELF-DUAL CAR ALGEBRAS AND QUASIFREE STATES

Self-Dual CAR algebras were introduced by Araki in 1968, who used them two years later to classify KMS states associated with strongly continuous groups of Bogoliubov automorphisms of CAR algebras, through the concept of quasifree states. Also, Self-Dual CAR algebras have the advantage to explicitate various properties of CAR algebras in general, being flexibler than the usual CAR algebra built over a fixed one-particle Hilbert space. Curiously enough, Araki's invention does not seem to have strongly percolated into the general mathematical-physics community.

In the first part of the present reading seminar, I will define Self-Dual CAR algebras, talk about some of their properties and discuss some results regarding quasi-free states and their relation to KMS states of CAR. In the second part, I will show a recent application of Self-Dual CAR algebras to the construction of generating functions of an interacting fermionic system on the lattice and at equilibrium as a Grassmann-Berezin integral.

In collaboration with N. J. Aza, J.-B. and W. de S. Pedra, and L. A. Pereira